

REMARKS

Claims 1-22 are pending and rejected in this application. Claims 1, 12 and 20 are amended hereby.

Responsive to the rejection of claims 1-6 and 8-22 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0235449 (Ahn) in view of U.S. Patent Publication No. 2004/0037601 (Murata), Applicants have amended claims 1, 12 and 20, and submit that claims 1-6 and 8-22 are now in condition for allowance.

Ahn discloses a driving apparatus and method for double-side printable machine (Figs. 1-3) including a fixing unit 40 (paragraph 64). A power transfer/cutoff part 162 is constructed with a latch gear meshed with second driving motor 157a to transfer the power when second driving motor 157a is clockwise rotated and to cut off the power when second driving motor 157a is counterclockwise rotated. The latch gear of power transfer/cutoff part 162 is meshed with a first paper discharge roller gear 151a through a second paper discharge roller idle gear 153, meshed with a second paper discharge roller gear 155a through second and third paper discharge idle gears 153 and 154, and meshed with a fixing roller gear 141a through first and second fixing roller idle gears 163 and 164. The controller controls the first driving motor 115a and first driving part 115 to stop driving when a rear end of sheet P passes through developing unit 30 (paragraphs 73 and 74). As second driving motor 157a is counterclockwise driven, the third paper discharge roller 60 is clockwise rotated by the third paper discharge roller gear 160a. Accordingly, first sheet P enters the paper return path B and is conveyed toward first reverse-transport roller 70. At this time second driving motor 157a is driven at a speed of 1.5~2 times higher than that of first driving motor 115a in order to increase double-side printing efficiency. At this time latch gear cutting off power transfer is installed between fixing roller 41, first and second paper discharge rollers 51 and 55 and second driving motor 157a to prevent an overload

from being transferred to fixing unit 40 as the driving speed of second driving motor 157a increases so that the counterclockwise rotation force of second driving motor 157a is not transferred to fixing roller 41 and first and second paper discharge rollers 51 and 55 (paragraphs 98 and 99).

Murata discloses a fixing apparatus and image forming apparatus (Figs. 1 and 7-11), including a fixing roller 25 that has reached a predetermined temperature. When the predetermined temperature is reached and the temperature of press roller 26 is low, the rotational speed of rollers 25 and 26 is increased before sheet P reaches fixing apparatus 20 (paragraph 53). The rotational speed of rollers 25 and 26 is changed until sheet P reaches fixing apparatus 20 in accordance with the states of fixing roller 25 and press roller 26 with respect to the predetermined temperatures. In this manner rollers 25 and 26 can be set to the predetermined temperature at which fixing is possible. When the temperature of both fixing roller 25 and press roller 26 are lower than the reference temperature, rollers 25 and 26 are rotated at an ordinary recording rotational speed to increase their temperatures (paragraphs 56 and 57). In the standby mode, when image fixing is not performed, the temperature of press roller 26, which is not in contact with an image to be fixed is detected. If the temperature is not a predetermined value, fixing roller 25 is rotated intermittently to maintain the temperature of press roller 26 at a certain constant level, as shown in Fig. 11 (paragraph 69). Temperature sensors 28 and 29 are located at one position relative to rollers 25 and 26 (Fig. 2).

In contrast claim 1 as amended, recites in part:

reversing the direction of operation of the motor to begin duplex routing of the media ... before the media leaves the fuser unit;

re-reversing the direction of operation of the motor ... when the media has been pulled back into the fuser unit far enough to clear a set of output rolls of the fuser unit

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Ahn, Murata or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Ahn discloses a driving apparatus method for double-side printable machine including a driving motor that is disengaged from the fixing rolls and operated in a counterclockwise direction. Murata teaches the intermittent rotation of a fixing roller and press roll during a standby mode. The common meaning of the phrase “standby mode” applies to a time period when a device is not being used and that there is not a predictable time in which it is going to be used. In Applicants’ invention the fuser unit is used for the fusing of toner on both sides of a sheet of media and is not in a standby mode as the media is routed away from the fuser unit. Since the return of the media is known the hot roll and backup roll are re-engaged and driven by the motor of the fuser unit in a process direction as soon as practical after the media clears the output rolls of the fuser. In contrast to the cited references, Applicants’ claim indicates that the reversing operation occurs before the media leaves the fuser unit and that the re-reversing step occurs once the media has been cleared of the output rollers of the fuser unit. In Applicants’ invention the hot roll and backup roll are re-engaged and driven prior to the media leaving the fuser unit. The amendment to the independent claim is supported by the specification at page 8, lines 17-28. Therefore, Ahn, Murata and any of the other cited references, alone or combination fail to disclose, teach or suggest the steps of reversing the direction of operation of the motor before the media leaves the fuser unit and re-reversing the direction of the motor when the media has been pulled back into the fuser unit far enough to clear a set of output rolls of the fuser unit, as recited in claim 1.

An advantage of Applicants’ invention is that the hot roll and backup roll are re-engaged and rotated in a process direction prior to the media leaving the fuser unit once the media clears

the output rolls in the fuser unit. Another advantage of the present invention is that the hot roll and backup roll are not driven when the output rolls are driving the media in a reverse direction. For the foregoing reasons, Applicants submit that claim 1, and claims 2-6, 8-11 and 22 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

In further contrast, claim 12 as amended recites in part:

stopping rotation of the hot roll and the backup roll ... before the media leaves the fuser unit;

resuming rotation of the hot roll and the backup roll ... when the media has been pulled back into the fuser unit far enough to clear a set of output rolls of the fuser unit;

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Ahn, Murata or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Ahn discloses a driving apparatus method for double-side printable machine including a driving motor that is disengaged from the fixing rolls and operated in a counterclockwise direction. Murata teaches the intermittent rotation of a fixing roller and press roll during a standby mode. The common meaning of the phrase “standby mode” applies to a time period when a device is not being used and that there is not a predictable time in which it is going to be used. In Applicants’ invention the fuser unit is used for the fusing of toner on both sides of a sheet of media and is not in a standby mode as the media is routed away from the fuser unit. In contrast to the cited references, Applicants’ claim indicates that the stopping rotation of the hot roll occurs before the media leaves the fuser unit and that the resuming rotation step occurs once the media has been cleared of the output rollers of the fuser unit. In Applicants’ invention the hot roll and backup roll are re-engaged and driven prior to a media leaving the fuser unit. The amendment to the independent claim is supported by the specification at page 8, lines 17-28. Therefore, Ahn, Murata and any of the other cited references, alone or combination fail to

disclose, teach or suggest the steps of stopping rotation of the hot roll and the backup roll before the media leaves the fuser unit and resuming rotation of the hot roll and the backup roll when the media has been pulled back into the fuser unit far enough to clear a set of output rolls of the fuser unit, as recited in claim 12.

An advantage of Applicants' invention is that the hot roll and backup roll are re-engaged and rotated in a process direction prior to the media leaving the fuser unit once the media clears the output rolls in the fuser unit. Another advantage of the present invention is that the hot roll and backup roll are not driven when the output rolls are driving the media in a reverse direction. For the foregoing reasons, Applicants submit that claim 12, and claims 13-19 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

In yet further contrast, claim 20 as amended, recites in part:

re-engaging the hot roll with the drive train before the media leaves the fuser unit once the media clears a set of output rolls of the fuser unit;

(Emphasis added). Applicants submit that such an invention is neither taught, disclosed nor suggested by Ahn, Murata or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Ahn discloses a driving apparatus method for double-side printable machine including a driving motor that is disengaged from the fixing rolls and operated in a counterclockwise direction. Murata teaches the intermittent rotation of a fixing roller and press roll during a standby mode. The common meaning of the phrase "standby mode" applies to a time period when a device is not being used and that there is not a predictable time in which it is going to be used. In Applicants' invention the fuser unit is used for the fusing of toner on both sides of a sheet of media and is not in a standby mode as the media is routed away from the fuser unit. In contrast to the cited references, Applicants' claim indicates that the re-engaging step occurs before the media leaves the fuser unit and that the media has cleared a set of output rollers of the

fuser unit. In Applicants' invention the hot roll and backup roll are re-engaged and driven prior to a media leaving the fuser unit. The amendment to the independent claim is supported by the specification at page 8, lines 17-28. Therefore, Ahn, Murata and any of the other cited references, alone or combination fail to disclose, teach or suggest the step of re-engaging the hot roll with the drive train before the media leaves the fuser unit once the media clears a set of output rolls of the fuser unit, as recited in claim 20.

An advantage of Applicants' invention is that the hot roll and backup roll are re-engaged and rotated in a process direction prior to the media leaving the fuser unit once the media clears the output rolls in the fuser unit. Another advantage of the present invention is that the hot roll and backup roll are not driven when the output rolls are driving the media in a reverse direction. For the foregoing reasons, Applicants submit that claim 20, and claim 21 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn in view of Murata and in further view of U.S. Patent No. 5,659,846 (Yoshioka). However, claim 7 depends from claim 1, and claim 1 is in condition for allowance for the reasons given above. Accordingly, Applicants submit that claim 7 is now in condition for allowance, which is hereby respectfully requested.

The Examiner has noted the clarification of the meaning of one-image mode and two-image mode as provided in the previous amendment and its reference to the specification in which the terms are defined. Since the terms have been defined in the specification that meaning is to be understood as the meaning of those terms as used in the claims.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are

therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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